Sound Changes of Double Vowel Letters OO

by

Tsuyoshi Kanamori

Ⅰ. Foreword

There is a lack of consistency, of one to one relation, between letters and their pronunciation in present-day English. If there were a perfectly consistent system, or consistently phonetic system of spelling, each symbol would represent one sound or one phoneme. But present-day English spelling is very complicated. This paper is concerned with one aspect of the relation between letters and their pronunciation. Specifically, the pronunciation of double vowel letters oo will be discussed from both a synchronic and diachronic points of view.

In this study double vowel letters are defined as two identical adjacent letters occurring within one morpheme. The two adjacent vowel letters in words such as co + operate, co + ordinate and the like are excluded because these are two morphemes. Also, contracted forms used by poets are not recognized as double vowel letters.

Words which have the double vowel letters are collected from the Longman Dictionary of Contemporary English. The Phonetic representations found in that dictionary are used here.

Ⅱ. A Survey of Double Vowel letters oo in present-day English

Ⅱ. 1 Double vowel letters in present-day English

There seem to be five double vowel letters: aa, ee, ii, oo, and uu. However, for practical purposes we may say that there are three double vowel letters, aa, ee and oo, in present-day English.[1] Although we can find one exception "vacuum"in the dictionary, it is a loanword or morphemic importation without substitution of the typical English language pattern.[2] It comes from the Latin vacuum. Thus, if we do not take loanwords into consideration, the letters ii and uu do not exist in present-day English.

	b	d	dʒ	θ	f	g	h	j	k	l	m	n	p	r	s	ʃ	t	tʃ	ts	v	w	z	θ	ʒ	#	$
b	u:	u:							ʊ		u:	u:		ʊ	u:		u:					u:	u:		u:	u:
d											u:			ɔ											u:	u:
dʒ																										
θ																										
f		u:								u:		u:					ʊ									u:
g		ʊ			u:							u:			u:										u:	u:
h		u: ʊ			ʊ				ʊ				u: ʊ				u:	u:		u:					u:	u:
j																										
k									ʊ	u:		u:					u:								u:	u:
l		ʌ			u:				ʊ		u:	u:	u:	ɔ			u:				u:				u:	u:
m		u:		u:								u:		ʊ	u:		u:	u:							u:	u:
n		u:							u: ʊ			u:	u:		u:		u:					u:				u:
p					u: ʊ				u:	u:		u:	u:	ʊ				u:		u:					u:	u:
r		u:			u:				ʊ	u:	u: ʊ	u:	u:		u:		u:	u: ʊ		u:					u:	u:
s												u:											u:			
ʃ									ʊ								u:								u:	u:
t		ʊ	u:						ʊ	u:		u:	u:				u:		ʊ				u:			
tʃ																							u:		u:	u:
ts																									u:	u:
v																									u:	u:
w		ʊ			u:					ʊ		u:	u:			u:						u:				u:
z											u:															u:	u:
θ																									u:	u:
ʒ																										
#		u:			u:						ʊ	ʊ										u:				

TABLE 1

PRONUNCIATION OF OO IN VARIOUS

PHONETIC ENVIRONMENTS

Ⅱ. 2 Data on the double vowel letters oo

The Longman Dictionary of Contemporary Engrish (1978) contains 606 entry words with the double vowel letters oo. They are surveyed from the standpoint of their phontic environments.

Table I gives the phonetic environments and the varieties of sounds of the double vowel letters oo. The preceding phonetic environments are arranged in the first column of the table and the following phonetic environments are arranged in the top row. The symbol # indicates a word boundary and the symbol $ indicates a syllable boundary.

Ⅱ. 3 Pronunciation of oo

The double vowel letters oo have several pronunciations in present-day English. High-back [u:] is the most common pronunciation of oo.

oo.	[u:]	ooze food taboo
	[ʊ]	book took poor
	[ɔ]	door floor
	[aʊ]	brooch
	[ʌ]	blood flood

The oo letters often have the sound [u:] in the initial and the medial position.

Ex. ooze oof boom fool cool

However ,they are pronounced differently in some phonetic environments.

[/___d]	ex.	good hood stood wood
[/___f]		hoof
[/___k]		book look took hook
[/___l]		wool
[/___m]		broom room[3]
[/___p]		hoop
[/___r]		poor moor spoor
[/___t]		foot soot[4]

From the analysis of the data collected we may say that [ʊ] tends to occur before the plosives and fricatives. Further, this tendency is stronger before voiceless sounds than before voiced sounds, and before plosives than fricatives.

The [ʌ] pronunciation occurs between [l] and [d].

Ex. blood flood

Additionally, the pronunciation is [ɔ] before [r].

Ex. door floor

But the pronunciation [ʊ] usually occurs between labials and [r].

Ex. poor boor moor

The [əʊ] pronunciation occurs specifically in the word brooch.

In the final position or before the syllable boundary, the pronunciation is always[u:].

Ex bamboo cuckoo moo shampoo

hoodoo moocow bazooka boodle noodle poodle[5]

This discrepancy beween spelling and pronunciation is mainly brought about by sound changes which occurred after the spelling of the English language become fixed. Thus, in many respects, present-day English spelling represents the pronunciation prevalent during the 17th and the 18th centuries, the period when the standardization of spelling progressed considerably. However, English vowels have undergone what Jespersen (1949) terms the Great Vowel Shift. All long vowels except [i:] and [u:] are raised in this vowel shift after 14th century. Therefore, the development of the English language from the 14th century will be reviewed in order to grasp the history of the sound change of double vowel letters oo.

Ⅲ. 0 Sound change of the double vowel letters oo

In the ME period, just as [e:]and [ɛ:] were spelled alike though distinct in sound, Chaucer spelled [o:] and [ɔ:] o or oo interchangeably, though they were distinct in sound. However, Chaucer kept them rigorously apart in his rhymes. Robinson (1974) shows the history of the two sounds as follows:

> Even the evidence of etymology is not always decisive, for special conditions sometimes affected the development of words. But as a general rule... o(close) corresponds to As. ō or ŏ lengthened before consonantal combinations, ON. ō, and OF.(or Anglo-Norman) ō(close): ǭ(open) to AS. or ON. ā and ǒ (when lengthened before a nasal or in open syllables)and OF. ǒ(when lengthened in open syllables). (Introduction, xxxii)

Ⅲ. 1 History of the sound change of [u:]

The present-day English [u:] comes from the ME [o:], which was raised to high-back [u:], and comes from the ME [u:] before labials or after [w] as in room, stoop, droop, whoop, swoon, and woo. Additionally, foreign high-back vowel in recent loan-words were superseded by [u:] when they were anglicized, as in boom, boor, groove, sloop, spook, poodle, igloo, loot, racoon, taboo,

typhoon and voodoo. In the suffix-oon, which is usually attached to loan-words from the Romance languages, [u:] superseded the native sound or [ʊ̃], as in baloon, buffoon, and dragoon.

Wyld (1949) refers to the change of [o:] to [u:] as follows:

> O.E. o was a mid-back-tense vowel, and in the south and Midlands, and in Kent, was preserved as such in Early Transition and Middle English. During the M. E. period, this sound, in both English and Norse words as well as in those of French origin, gradually underwent a process of over-rounding... and was subsequently raised to a high-back tense [ʊ], which stage it had reached in late Middle English.

We can find occasional spelling ou for oo in some works in the ME period. Examples are goude in Pearl (c.1370) and goud in Patience (c.1350). Ou or ow has been used for [u:] ever since the French convention was introduced into English spelling in the ME period. A sound change of [o:] to [u:] might be suggested by these occasional spellings. Moreover, ou spellings were commonly used both in private letters and in printed books from the 15th c.through the 16th c. as goude in Margaret Paston's letter (1456) and in Queen Elizabeth's letter (1456), bloud is used for blood. Bloud can also be found in the poems of Surrey. He rhymes bloud with foode in his poems. This may indicate that foode was pronounced [fu:d] in those days, rhyming with bloud. As the foode was pronounced [fo:d] in Chaucer's time, the sound change of [o:] to [u:] occurred before Surrey's time. But in the North of England and in Scotland, ME [o:] underwent an entirely different development. For example, bluid for blood and guid for good can be found in the famous Scot ballad Edward.[6] Moore[7] (1957) gives the development of ME [o:] in the North as follows:

> Northern Middle English [o:] developed, about the beginning of the fourteenth century, into a sound which is believed to have been similar to or identical with [y:] and which was represented at first by o or u and later by o, oi, u, or ui. OE stod, early Northern ME stod [sto:d], later Northern ME stod, stud, stuid. This sound rimes with the u of French loan words that had [y:] in French.

Change [o:] to [u:] forms parts of the Great Vowel Shift. There is still considerable discussion about what was the cause of this sound shift. The raising changes may have been caused by French influences, deduced from the following two facts. On the one hand, Norman people immigrated into England as the ruling class after the Norman Conquest in 1066. Norman French began to be used as the language of the upper class in England. But after the 13th century, the ruling class, whose tongue had been Norman French, came to use English as their first language. The Norman ruling class had to settle down in England since the English King John the Lackland lost all his northern provinces. Their upper class English, or French accented English, perhaps predominated from that

time. Present-day English has developed from this upper class dialect,because the dialect from it is derived is East Midland or London. After the latter half of the 14th century, England suffered the fearful catastrophe of the Black Death in 1348-9; almost two thirds of the people had died in London. Lower class people must have died in greater numbers than upper class people, because the pest would prefer unsanitary conditions.

On the other hand, loanwords from French increased remarkably from the 13th century to the 14th century. This shows the strong French influence at that time. It was in this period that the raising changes occurred in the English language.

Ⅲ. 2 History of the sound change of [ʊ]

The present-day English [ʊ] come floom the Me [ʊ] and floam the ME [o:] which was raised to [u:] and later shortened. The ME wode or "wood" and wolle or "wool" had the [ʊ] sound and it has remained the same sound in the present-day English, although the spelling for the sound has been changed to the double vowel letters oo.

The LME [u:], which comes from ME [o:], has developed into three distinct groups: [u:], [ʊ] and [ʌ]. Wyld[8] gives several examples of each groups:

> Of the words containing M. E. o. we now distinguish three groups: ……
>
> (a) those pronounced with Late M. E. [u] unchanged……moon, spoon, rood, soon, brood, tooth, stool, food, goose, hoof;
>
> (b) those pronounced with an entirely different vowel [a], ……blood, flood, glove, must, done, month, Monday mother, brother;[9]
>
> (c) those pronounced with short, slack [u] ……good, hood, stood, foot, soot, shook, cook, rook, look, took.

Of the two groups which changed their pronunciation, group (c) is the result of the shortening of the LME [u:]. This change took place regularly before [k],as in book, brook, shook, took, etc. It also occurred sporadically before alveolars and labials, as in good, hood, stood, foot, root and soot, as well as in hoop, hoof, coop, broom and room.

The present-day English [ʌ], i. e. group (b), comes from [ʊ] which is the result of the shortening of the ME [u:]. Some evidences for these short sounds exist from the 16th century. The Greyfriar's Chronicle (1531)[10] has an occasional spelling[11] of fluddes for flood, and Dr. Dee's Diary[10] (1588) had blud for blood. And Shakespeare rhymes blood with flud and mud in A Lover's Complaint (1609).[12] Thus, this shange of [u:] to [ʊ] took place by the 16th century. This shortened [ʊ] was unrounded and lowered to [ʌ] still later. Nakao (1985) thinks that the change of [ʊ] to

[ʌ] was completed before the middle of the 17th century. There are only two words which have the [ʌ] sound in present-day English: blood and flood. If the change of [ʊ] to [ʌ] occurred after the change of [o:] to [ʊ] had been completed,there should be no [ʊ] in present-day English. But not every [ʊ] changed to [ʌ]. It remained in some words and we can find [ʊ] sound in look, good, stood. etc. This seeming contradiction is explained by Wyld(1949) who thinks that there were two independent changes which occurred in chronological order. He says:

> In the fifteenth century there was probably at first only one type, [u]; later two types [u,ʊu]; still later the latter became [a], and these two [u, a] remained the only types till towards the end of the seventeenth century, when, apparently, the third, [u] developed, by a later shortening of [u].

Wyld's theory may be represnted thus:

15th c.	16th c.	17th c.	18th c.
			[ʊ]
[u:]	[u:]	[u:]	[u:]
	[ʊ]	[ʌ]	[ʌ]

Ⅲ. 3 Change of [u:] to [ʊ] in the 15th c.

This change took place bofore [d], as in flood and blood. We can find evidence for this change in the occasional spellings and rhymes in some works of the ME period. This change might be due to analogy with the sound of wood. The word came to have the double vowel letters oo in the 15th c., although it retained the [ʊ] sound from the OE period. In the 16th c. Italian literary works were quite popular with the upper class in England. Many poems were written in the Italian fashion, i. e. the form which consists of three quatrains rounded off with a rhyming couplet. This elaborate rhyme scheme played an important role in poems of those days. This poetic propensity might have aided the process of analogy. In Chaucer's works, wood "mad" rhymed with blood and flood. This wood < OE wod and wood < OE wudu might have been confused in the rhymes of the following century. Since those words are spelled alike after the spelling change of the ME wudu to wood, although they are pronounced differently, many poets may have been satisfied with what is called eye-rhyme. Thus the pronunciation might have been taken wrong and caused the sound change. Those words which frequently rhymed with wood must have changed their vowel quality.

Ⅲ. 4 Change of [ʊ] to [ʌ]

This change affected all short [ʊ] sounds existing in the 17th c., that is, it is an isolative change.[13]

The factors of isolative change are dificult to determine. But there seems to be close relation between the change of [ʊ] to [ʌ] and the French influence. Jespersen shows that Wallis, a grammarian of the 17th c., compareshis own u in but, cut, bur, burst, curst, with French eu in the word serviteur [sərvitoe:r].[14] In loanwords from English into French, English [ʌ] is usually transferred to [oe] in present-day French.[15] Additionally, in those days it was indispensable for politicians and diplomats to have some knowledge of French.Also,after the Lois XIV's announcement of the formal revocation of the Edict of Nantes, a mass exodus, estimated from 70,000 to 80,000, ensued from France to England. They mixed into several classes in England, making it easier to spread French into English. The result was that the quantity of loanwords passing from French to English in the 17th century was the second greatest in the history of the language.[16]

French writers such as Moliere, Racine and etc. affected English literature of those days very much. Many writers in England, such as Dryden, Pope, and atc., could read and write French and study French literature. Many French words, not anglicized pronunciation were preserved, were used in their works. The change of [ʊ] to [ʌ] is supposed to have occurr in the late 17th century, being completed in the early 18th century.

Ⅲ. 5 Change of [u:] to [ʊ] in the 18th century.

This change seems relevant to the data from a synchronic survey of vowel duration. Based on data from the sound spectrograph, Umeda (1975) reports the influence of the environment on the duration of a vowel.[17] He proposes that the environmental effects on durational aspects of segments are:

1. [v/___#] > [v/___c#]
2. [v/___c#] > [v/___cvc#]
3. [v/___c(voiced fricative)#] > [v/___c(voiced plosive)#] >
   [v/___c(nasal)#] > [v/___c(voiceless fricative)#] >
   [v/___c(voiceless plosive)#]

The change of [u:] to [ʊ] occurred before [f, k, m, p, t,]. Particularly before [k], this shortening extende to all words except spook and snook. It occurred mainly before voiceless consonants. thus we migh say that the change applied to those vowels which were shorter than vowels before voiced consonants. Although the change also occurred before voiced consonants such as broom and room fluctuating between the [u:] and [ʊ], that change has not become established. However, not all vowel in such phonetic environments which are shorter than vowels occurring before voiced consonants were affected by this change. Why does the change not always apply to whole words with

the phonetic condition in present-day English? There are three reasons. first, words which came to be spelled oo after the change became established, i. e. after the 18th century, were not affected by this change. The following words were spelled ou or ow before they acquired the double vowel letters oo in the 18th century:

coot coop hoot loop roop

poop scoop skoot stoop swoop

And the following words were newly made or are loanwords which came into the English language after the 19th century:

snoop (Dutch) spoof bazooka (invented)

Second, a word whose sound would resemble another word if it canged its sound its sound, might not change its vowel quality. In the perception of languago sounds, confusion occurs between segmental sounds. Miller & Nicely (1955) have formulated a confusion matrix. (See Figure 1.) The sounds in the column are perceived as several sounds, as in the rows. for example, [p] is artculated 662 times and perceived as [p] 392 times, as [t] 91 times, as [k] 207 times, etc.

	p	t	k	f	θ	s	ʃ	b	d	g	v	ð	z	dʒ
p	392	91	207	30	29	6	2	1	1		1	2		
t	109	547	97	6	9	3	8	1				1	2	
k	190	127	435	17	9	9	5					1		
f	27	16	16	581	151	15	1	11	2	1		3		
θ	35	24	22	260	320	45	7	5	4	5	6	6	5	
s	8	8	5	29	57	509	84	4	2	6	1	1	3	2
ʃ	1	9	6	4	6	33	701		3					
b	1			13	10	4		585	14	9	11	255	7	1
d							8	5	475	107	11	33	29	39
g					2			14	201	421	3	27	47	82
v				6	5	2		81	5	9	527	113	21	1
ð					6			40	6	31	205	342	61	7
z					1	1	1	7	40	6	22	70	42	473
dʒ								1	31	25	4	9	56	535

Figure 1. Confusion Matrix of Segmental Sounds

(based on Miller & Nicely 1955)

The numerical values without underline show the frequency of confusion between two different sounds in perception. In this matrix we observe a relation between the confusion of sounds and their common distinctive features. Perceptual confusion often occurs between [p-k], [t-k], [t-p], [f-θ], [b-v], [d-g] and [v-ð]. This confusion may have something to do with therapeutic change: not to produce to produce words which are minimal pairs in the contrasts stated above. Therefore, [ru: t] root, for example, did not change to [rʊt] because that is very similar to [rʊk] rook. This also applies to the following pairs:

shoot [u:t] ····· shook [ʃʊk]

boot [bu:t] ····· book [bʊk]

hoop [hu:p] ····· hook [hʊk]

Third, the sound of a doublet influences the other one. Troop, for example, did not change its sound [tru:p] to [trʊp] because of analogy with its doublet's pronunciation [tru:p] troup. And the same kind of analogy is probably applies to the pronunciation of brooch [brəʊtʃ]. It is influenced by the sound of the allograph broach [brəʊtʃ].

Ⅲ. 6 History of the sound change of [ɔ] / ___[r]

The ME [o:] was not raised to [u:] but became a lowered short [ɔ] before [r]. This change might be surmised from the occasional spellings and rhymes dating from those days. We can find the occasional spelling of por for poor in the letters of Margaret Queen of Scotland (1503-4), Cary Verney (1642) and Lady Hobart (1666).[13] Shakespeare rhymes poor with more and stoore in Love's Labour's Lost (1598), poor with store in Romeo and Juliet (1595), and poor with whore in King Lear (1605). These occasional spell-ings and rhymes indicate that the relevant vowels in those words are not long but short. In England, the [r] reduced to [ə] and was later dropped before a pause or a consonant. This [ə] also developed before the retained [r] when it preceded a vowel. In this manner [ɔə^{r}] came to be the pronunciation for the letters oor. Much later this [ɔə^{r}] was further smoothed or monophthongized to [ɔə^{r}]. However, in American English, [r] did not reduce to [ə] and was not dropped before a pause or a consonant, it has been retained up to the present except for dialectal sounds.[19] Since [r] has not been dropped in American English it seems reasonable to assume that the dropping of [r] in British English occurred sometime after 1620 when the first English crossed the Atlantic to North America. This lowering change may be caused by the following [r]sound. When a vowel is followed by [r], r-colouring or rhotacization occurs in American English.[20] The rhotacized vowel is pronounced by raising and pulling back the tip of the tongue as in a retroflex consonant.This sound is somewhat similar to the midcentral vowel [ə],

though the features of rhotacization are not identical to a retroflex sound. Thus, the lowering change of [o:] to [ɔ] or [i:] to [ɪ] occured before the [r] sound.

Ⅲ. History of the sound change of [ʊ] /____[r]

The present-day English [u] before [r] derives from an earlier [ɔ] before [r] which comes from the ME [o:]. There are three words which have this sound in present-day English: boor, moor, poor. This sound change occurred between labials and [r]. The preceding labials ([b], [m], or [p])in each word might have influenced the following segmental sounds in such a way as to maintain its rounding feature. In other words, the following segmental sound was assimilated to the preceding bilabial sound and retained the feature of rounding. Parallel assimilation exists in present-day English, when [w] or the sound of the rounding feature preceding the vowel [a] permits a rounded [ɒ] pronunciation.

Ex. was [wɑz, wɒz]
water [wɑtə , wɒt]
want [wɑnt, wɒnt]

Ⅳ. Summary

Sound changes of the double vowel letters ee and oo are summarized in Fig. 2.

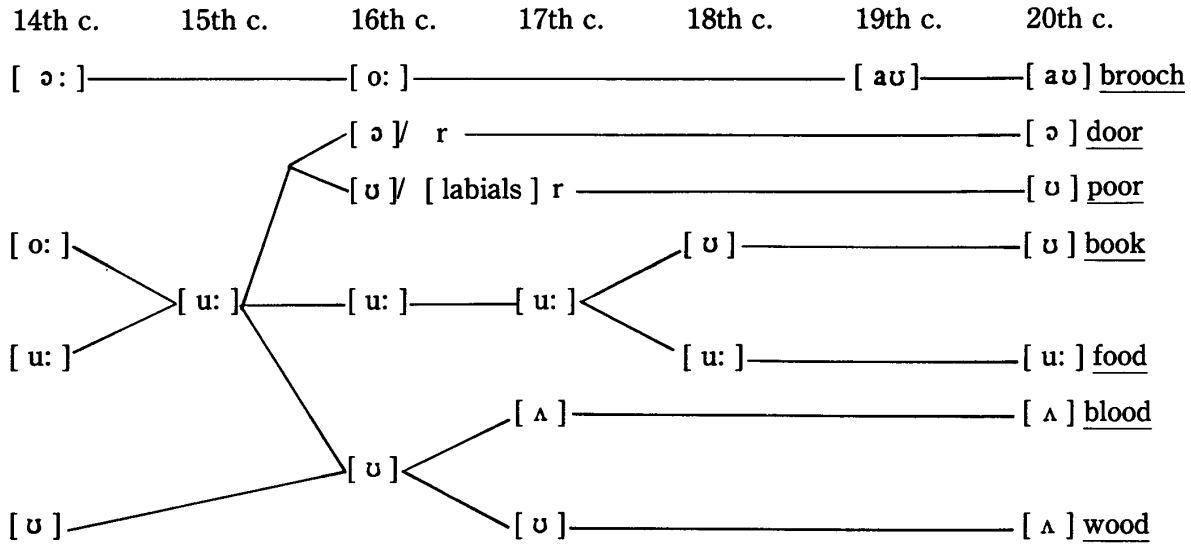

Figure 2

SOUND CHANGES OF THE DOUBLE VOWEL LETTERS OO

Notes

1. On the Orthographic Rules of English Double Vowel Letters, Jespersen, p.147 (1949)
2. On loanwords, Einar Haugen, pp.62-3 (1969)
3. However, broom and room fluctuate between the [u:] and [ʊ] pronunciation. see J. S. Kenyon, Ch. 303. (1951)
4. This word also has the pronunciation [ʌ] preserved in the southern region of the United States.
5. In boodle [bu:dl], noodle [nu:dl] and poodle [pu:dl], the laterals make syllables and indicates that the final consonant is a syllabic consonant.
6. Why dois your brand sae drap wi bluid,
   Edward, Edward,
   Why dois your brand sae drap wi bluid,
   And why sae sad gang yee O ?
   O I hae killed my hauke sae guid,
   Mither, mither,
   O I hae killed my hauke sae guid,
   And I had nae mair bot hee O.
   (emphasis added)
7. S. Moore, Historical Outlines of English Sounds and Inflections. p.124 (1957)
8. H. C. Wyld p.176 (1949)
9. Wyld uses [a] for [ʌ], as in butter [batə].
10. See c. Davies, p.79. p.97 (1970)
11. H. Penzl cites occasional spellings as the evidence for sound change in his "The Evidence of Phonemic Changes" pp. 10-24, (1969)
12. On Shakespeare's rhyme, h. Kokeritz, (1953)
13. On classes of sound change, H. Sweet, pp. 14-50 (1888)
14. Dictionnaire Francais-Japonais, (1978)
15. O. Jespersen, p. 330. (1949)
16. Fernand Mosse, p. 89. (1963)
17. N. Umeda (1975)
18. C. Davies, pp. 70-1., 120-1., and 128-24. (1970)
19. Kenyon & Knot (1953) show the r-diphthong [ɔʳ] for the letters oor. This pronunciation is

further explained by Kenyon (1951) Ch. 352 ff.

20. On rhotacization, P Ladefoged, p. 78 p. 264 (1975)

BibLiography

Bloomfield, Leonard. Language, 1933; rpt. Chicago: The University of Chicago press, 1984.

Davies, Constance. English Pronunciation, Westport: Greenwood Press, 1970.

Haugen, Einar. " The Analysis of Linguistic Borrowing" Approaches to English Historical Linguisics, ed. Roger Lass, New York: Holt, Rinehart and Winston, Inc., 1969.

Jespersen, Otto. A Modern English Grammar, on Historical Principles, Part I Sound and Spelling. Copenhagen: Einar Munkusgaard, 1949.

Kenyon, John S. and Knott, Thomas A. A Pronouncing Dictionary of American English. 1944; rpt. Springfield:G. & C. Merriam Co., 1953.

Kokeritz, Helge. Shakespeare's Pronunciation. London: Oxford University Press, 1953.

Ladefoged, Peter. A Course in Phonetics, 1975; rpt. New York: Harcourt Brace Jovanovich, Inc., 1982.

Moore, Samuel. Historical Outlines of English Sounds and Inflections Michigan: George Wahr Publish Co., 1957.

Mosse, Fernand. Esquisse d'une Histoire de la Langue Anglaise. trans. Toshio Gunshi, Tokyo:Kaibunsha Ltd., 1963.

Nakao, Toshio. English Historical Phonology: Outline of English Linguistics. Vol. 11 ed. Akira Ota. Tokyo: Taishukan, 1985.

Penzl, Herbert. " The Evidence for Phonemic Change "Approaches to English Historical Linguistics. ed. Roger Lass, New York: Holt Rinehart and Winston, Inc., 1969.

Robins, F. N. The Works of Geoffrey Chaucer. London: Oxford University Press., 1974

Sweet, Henry. A History of English Sound from the Earliest Period Oxford: Clarendon, 1888.

Umeda, N." Vowel Duration in American English "The Journal of the Acoustical Society of America. Vol. 58.

Wyld, Henry C. A Short History of English. London: Murray, 1927.